

Low Voltage Dual 150mA LDO with sequence control

The RP152x Series are CMOS-based dual output LDO regulators featuring 150mA output with an optional start-up sequence control function. RP152x features a supply current as low as 40μA per output, a minimum input voltage from 1.4V and the output voltage can be set from 0.8V to 3.6V (in 0.1V steps). The new optional start-up sequence offers output VR2 to start-up 100μs delayed after VR1. RP152x is available in SOT-23-6 and DFN1212-6 packages.

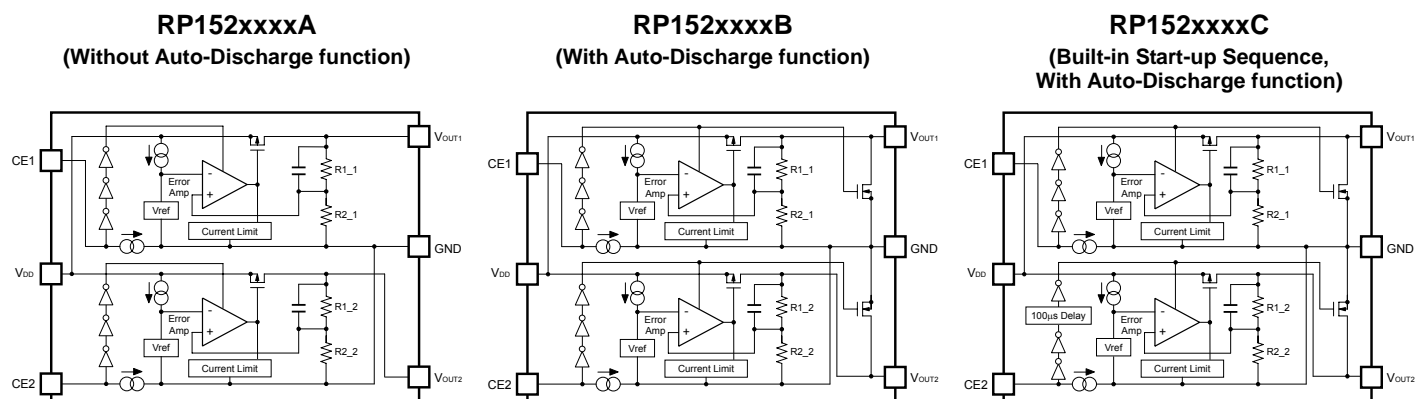
FEATURES

- Supply Current (I_{SS}) Typ. 40μA × 2 ($V_{IN} = \text{SET } V_{OUT} + 1.0V$)
- Standby Current ($I_{standby}$) Typ. 0.1μA × 2 (Same as above, CE1/CE2="L")
- Dropout Voltage (V_{DIF}) Typ. 0.22V ($I_{OUT} = 150mA$, $V_{OUT} = 2.8V$)
- Ripple Rejection (RR) Typ. 70dB ($f = 1kHz$)
- Input Voltage Range (V_{IN}) 1.4V to 5.25V
- Output Voltage Range (V_{OUT}) 0.8V to 3.6V* (internally fixed)
- Output Voltage Accuracy ±1%
- Temp. coeff. of Output Voltage Typ. ±80ppm/°C
- Line Regulation Typ. 0.02%/V
- Fold-back Protection Circuit Current limit Typ. 40mA
- Auto-Discharge function B/C Version
- Start-up Sequence control C Version
- Packages DFN1212-6, SOT-23-6
- Ceramic Capacitor can be used. 0.22μF or more

*) For information about combination of output voltage, visit our website to check.

(The above shows specification at $T_{opt} = 25^\circ C$. Design assurance value at $-40^\circ C \leq T_{opt} \leq 85^\circ C$ is also available. For details, please refer to the datasheet.)

BLOCK DIAGRAMS



SELECTION GUIDES

Halogen Free	Package	Q'ty per Reel	Part No.
H/F	DFN1212-6	5,000 pcs	RP152Lxxx*-TR
H/F	SOT-23-6	3,000 pcs	RP152Nxxx*-TR-FE

xxx : Specify a combination of output voltage for each output using serial numbers.

* : Select from (A) without auto-discharge function or (B) with auto-discharge function or (C) with Start-up sequence and auto-discharge function.

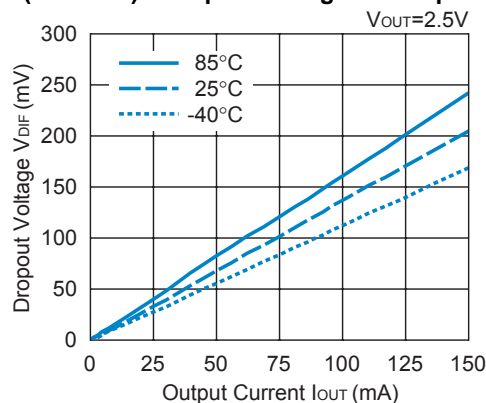
PACKAGES

DFN1212-6	SOT-23-6																								
<p>Top View</p> <p>Bottom View</p>																									
<table border="1"> <tr><td>1</td><td>V_{OUT1}</td></tr> <tr><td>2</td><td>V_{OUT2}</td></tr> <tr><td>3</td><td>GND</td></tr> <tr><td>4</td><td>CE2</td></tr> <tr><td>5</td><td>V_{DD}</td></tr> <tr><td>6</td><td>CE1</td></tr> </table>	1	V _{OUT1}	2	V _{OUT2}	3	GND	4	CE2	5	V _{DD}	6	CE1	<table border="1"> <tr><td>1</td><td>CE1</td></tr> <tr><td>2</td><td>V_{DD}</td></tr> <tr><td>3</td><td>CE2</td></tr> <tr><td>4</td><td>V_{OUT2}</td></tr> <tr><td>5</td><td>GND</td></tr> <tr><td>6</td><td>V_{OUT1}</td></tr> </table>	1	CE1	2	V _{DD}	3	CE2	4	V _{OUT2}	5	GND	6	V _{OUT1}
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*) The tab is substrate level (GND).

TYPICAL CHARACTERISTIC

RP152x (VR1/VR2) Dropout Voltage vs. Output Current



APPLICATIONS

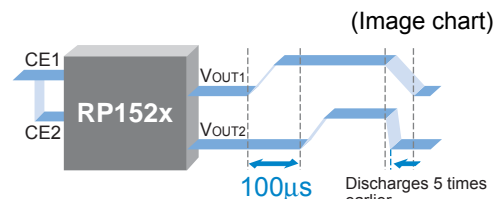
- Power source for hand-held communication equipment, cameras, and VCRs
- Power source for battery-powered equipment
- Power source for home appliances

Low Voltage Dual 150mA LDO with sequence control

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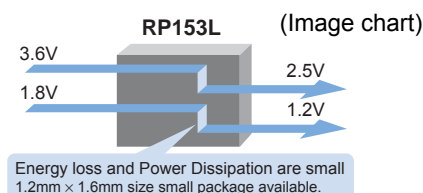
Built-in Sequence control

RP152xxx has a sequence control function. When CE1 and CE2 are enabled, VR2 has a 100 μ s delayed start up compared with VR1. As for the shutdown sequence, the discharge period for VR2 is 5 times shorter compared to VR1.



RP153L Dual LDO with 2 input pins

In addition to RP152x with one shared input pin, another dual LDO RP153L is available with similar electrical specifications but with an individual input pin for each LDO. Due to the low minimum input voltage RP153L is able to extend battery life, additionally the LDO has less power dissipation by the low dropout voltage between input and output. RP153L uses a small DFN1216-8 package. An optional version with enhanced load transient response is available as well.



Dual 150mA LDO Regulator Comparison

	RP152x Series	RP153L Series	R5323x Series
Output Current (Min.)	150mA	150mA	150mA
Supply Current (Typ.)	40 μ A×2	40 μ A×2 / 85 μ A×2*	90 μ A×2
Standby Current (Typ.)	0.1 μ A×2	0.1 μ A×2	0.1 μ A×2
Dropout Voltage	0.22V	0.22V	0.22V
Input Voltage Range	1.4V to 5.25V	1.4V to 5.25V	2.0V to 6.0V
Output Voltage Range	0.8V to 3.6V	0.8V to 3.6V	1.5V to 4.0V
Output Voltage Accuracy	±1%	±1%	±2%
Ripple Rejection (Typ.)	70dB	70dB	70dB
Protection Circuits	Fold-back Protection Circuit	Fold-back Protection Circuit	Fold-back Protection Circuit
Operation Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Packages	DFN1212-6 SOT-23-6	DFN1216-8	WLCSP-6-P1 DFN(PLP)1820-6 SOT-23-6
etc.	With Auto-Discharge function, With Sequence control function	With Auto-Discharge function, With enhanced load transient response	With Auto-Discharge function

Note) RP152x is not pin compatible to R5323x.

*) Supply current for the enhanced load transient version is 85 μ A × 2.

Ricoh Co.,LTD. Electronic Devices Company



■ Ricoh presented with the Japan Management Quality Award for 1999.
Ricoh continually strives to promote customer satisfaction, and shares the achievements of its management quality improvement program with people and society.



■ Ricoh awarded ISO 14001 certification.
The Ricoh Group was awarded ISO 14001 certification, which is an international standard for environmental management systems, at both its domestic and overseas production facilities. Our current aim is to obtain ISO 14001 certification for all of our business offices.



Ricoh completed the organization of the Lead-free production for all of our products. After Apr. 1, 2006, we will ship out the lead free products only.
Thus, all products that will be shipped from now on comply with RoHS Directive.

<http://www.ricoh.com/LSI/>

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